**Appendix/ Supplementary data**

**Supplementary Table 1. Demographic characteristics (unmatched cohort)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall**  **(n=440)** | | **Limited Resection**  **(n=215)** | | **Extended Resection (n=225)** | | **P value** |
|  | **N** | **%** | **N** | **%** | **n** | **%** |
| Euroscore [IQR] | 9.5 | [7-12] | 9 | [7-12] | 10 | [7-12] | 0.918 |
| Age [IQR] | 66.7 | [56-74] | 66 | [55.1-73.6] | 67.8 | [57.3-74.4] | 0.264 |
| Male | 282 | 64.1 | 137 | 63.7 | 145 | 64.4 | 0.874 |
| NYHA III-IV | 62 | 14.1 | 28 | 13.0 | 34 | 15.1 | 0.529 |
| CCS III-IV | 61 | 13.9 | 29 | 13.5 | 32 | 14.2 | 0.824 |
| Prior cardiac surgery | 42 | 9.5 | 22 | 10.2 | 20 | 8.9 | 0.632 |
| Diabetes | 24 | 5.5 | 10 | 4.7 | 14 | 6.2 | 0.468 |
| Hypertension | 264 | 60.0 | 123 | 57.2 | 141 | 62.7 | 0.243 |
| Smoker | 181 | 41.1 | 83 | 38.6 | 98 | 43.6 | 0.569 |
| Renal disease | 14 | 3.2 | 4 | 1.9 | 10 | 4.4 | 0.123 |
| Pulmonary disease | 49 | 11.1 | 24 | 11.2 | 25 | 11.1 | 0.986 |
| Obese (BMI >28) | 148 | 33.6 | 65 | 30.2 | 83 | 36.9 | 0.44 |
| PVD | 18 | 4.1 | 11 | 5.1 | 7 | 3.1 | 0.47 |
| LVEF <30% | 79 | 18.0 | 39 | 18.1 | 40 | 17.8 | 0.921 |
| Salvage surgery | 35 | 8.0 | 18 | 8.4 | 17 | 7.6 | 0.752 |
| Aortic arch procedure | 93 | 21.1 | 45 | 20.9 | 48 | 21.3 | 0.918 |
| Additional cardiac procedure | 89 | 20.2 | 54 | 25.1 | 35 | 15.6 | 0.013 |
| Unstable | 74 | 16.8 | 39 | 18.1 | 35 | 15.6 | 0.75 |
| *IQR: interquantile range, BSA: body surface area, CCT: cross clamp time, CBP: cardiopulmonary bypass, CAT: circulatory arrest time, NYHA: New York Heart Association, CCS: Canadian Cardiovascular Society, TIA: transient ischemic attack, CVA: cerebrovascular accident, PVD: peripheral vascular disease, LVEF: left ventricular ejection fraction.* | | | | | | | |

**Supplementary Table 2. Propensity matched demographics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Limited Resection (n=109)** | | **Extended Resection (n=109)** | |  |  |
|  | **N** | **%** | **N** | **%** | **P value** |  |
| Age >75 | 21 | 19.3 | 20 | 18.3 | 1.000 |  |
| Male | 68 | 62.4 | 71 | 65.1 | 0.775 |  |
| NYHA III-IV | 9 | 8.3 | 10 | 9.2 | 1.000 |  |
| CCS III-IV | 18 | 16.5 | 10 | 9.2 | 0.169 |  |
| Prior cardiac surgery | 7 | 6.4 | 6 | 5.5 | 1.000 |  |
| Diabetes | 2 | 1.8 | 2 | 1.8 | 1.000 |  |
| Hypertension | 62 | 56.9 | 63 | 57.8 | 1.000 |  |
| Smoker | 46 | 42.2 | 44 | 40.4 | 0.892 |  |
| Renal disease | 0 | 0.0 | 0 | 0.0 | 1.000 |  |
| Pulmonary disease | 4 | 3.7 | 5 | 4.6 | 1.000 |  |
| Obese (BMI >28) | 4 | 3.7 | 5 | 4.6 | 1.000 |  |
| PVD | 9 | 8.3 | 9 | 8.3 | 1.000 |  |
| LVEF <30% | 11 | 10.1 | 11 | 10.1 | 1.000 |  |
| Salvage surgery | 3 | 2.8 | 3 | 2.8 | 1.000 |  |
| Additional cardiac procedure | 9 | 8.3 | 10 | 9.2 | 1.000 |  |
| Unstable | 22 | 20.2 | 25 | 22.9 | 0.743 |  |
| *IQR: interquantile range, BSA: body surface area, CCT: cross clamp time, CBP: cardiopulmonary bypass, CAT: circulatory arrest time, NYHA: New York Heart Association, CCS: Canadian Cardiovascular Society, TIA: transient ischemic attack, CVA: cerebrovascular accident, PVD: peripheral vascular disease, LVEF: left ventricular ejection fraction.* | | | | | |  |
|  | | | | | | |

**Supplementary Table 3. Univariate and multivariate analysis for in hospital death**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **OR** | **95% CI** | | | **P value** | **OR** | **95% CI** | | | **P value** | |
|  |  | lower | Upper |  | |  | | lower | upper | |  | |
| Extended Resection | 2.48 | 1.26 | 4.89 | 0.008 | | 2.92 | | 1.36 | 6.29 | | 0.006 | |
| Male gender | 0.64 | 0.32 | 1.29 | 0.211 | | 0.57 | | 0.26 | 1.27 | | 0.171 | |
| CCS III-IV | 2.31 | 1.10 | 4.85 | 0.028 | | 1.93 | | 0.83 | 4.49 | | 0.124 | |
| NYHA III-IV | 3.38 | 1.68 | 6.83 | 0.001 | | 2.49 | | 1.10 | 5.63 | | 0.029 | |
| Prior cardiac surgery | 1.58 | 0.63 | 3.99 | 0.334 | |  | |  |  | |  | |
| Diabetes | 1.31 | 0.37 | 4.57 | 0.675 | |  | |  |  | |  | |
| Hypertension | 1.89 | 0.94 | 3.77 | 0.073 | | 1.70 | | 0.79 | 3.67 | | 0.176 | |
| Smoking history | 1.65 | 0.88 | 3.08 | 0.116 | | 1.51 | | 0.73 | 3.11 | | 0.267 | |
| Renal disease | 2.56 | 0.69 | 9.55 | 0.162 | | 1.31 | | 0.28 | 6.08 | | 0.734 | |
| Pulmonary disease | 0.78 | 0.27 | 2.28 | 0.65 | |  | |  |  | |  | |
| PVD | 1.87 | 0.52 | 6.74 | 0.338 | |  | |  |  | |  | |
| LVEF moderate/poor | 1.84 | 0.90 | 3.76 | 0.094 | | 1.29 | | 0.56 | 2.99 | | 0.554 | |
| Hemodynamically unstable | 2.24 | 1.10 | 4.56 | 0.026 | | 1.66 | | 0.70 | 3.92 | | 0.252 | |
| Salvage surgery | 3.66 | 1.59 | 8.42 | 0.002 | | 3.60 | | 1.27 | 10.17 | | 0.016 | |
| Obese (BMI >28) | 0.72 | 0.36 | 1.44 | 0.348 | |  | |  |  | |  | |
| Additional cardiac procedures | 2.00 | 1.01 | 3.95 | 0.047 | | 2.23 | | 1.01 | 4.92 | | 0.047 | |
| Aortic arch procedure | 1.28 | 0.62 | 2.63 | 0.509 | |  | |  |  | |  | |
| Log euroscore | 0.96 | 0.84 | 1.09 | 0.495 | |  | |  |  | |  | |
| Age >70 | 1.58 | 0.85 | 2.96 | 0.152 | | 1.86 | | 0.90 | 3.84 | | 0.094 | |

*OR: odds ratio, CI: confidence interval, CCS: Canadian cardiovascular score, NYHA: New York Heart Association, PVD: peripheral vascular disease, LVEF: left ventricular ejection fraction, BMI: body mass index*

**Supplementary Table 4. Long term survival in unmatched and propensity matched data.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall (n=440)** | | | **UNMATCHED**  **Limited Resection (n=215)** | | | **Extended Resection (n=225)** | | |  |
|  | **%** | **n at risk** | **deaths** | **%** | **n at risk** | **deaths** | **%** | **n at risk** | **deaths** | **P value** |
| **Unmatched** |  |  |  |  |  |  |  |  |  |  |
| 1-year | 83.4 | 440 | 71 | 87.6 | 215 | 26 | 79.4 | 225 | 45 | 0.929 |
| 3-year | 77.4 | 346 | 23 | 85.5 | 179 | 4 | 69.5 | 167 | 19 | 0.015 |
| 5-year | 73.4 | 262 | 12 | 83.4 | 142 | 3 | 64.1 | 120 | 9 | 0.003 |
| 10-year | 58.6 | 204 | 32 | 69 | 105 | 12 | 49.6 | 99 | 20 | 0.008 |
| 15-year | 44.1 | 80 | 14 | 64.3 | 22 | 1 | 34.2 | 58 | 13 | 0.004 |
|  | | | | | | | | | | |
| **PROPENSITY MATCHED** | | | | | | | | | | |
|  | **Overall (n=218)** | | | **Limited Resection (n=109)** | | | **Extended Resection (n=109)** | | |  |
|  | **%** | **n at risk** | **deaths** | **%** | **n at risk** | **deaths** | **%** | **n at risk** | **deaths** | **P value** |
| **Propensity-matched** | |  |  |  |  |  |  |  |  |  |
| 1-year | 87.6 | 218 | 27 | 88.07 | 109 | 13 | 87.16 | 109 | 14 | 0.727 |
| 3-year | 79.3 | 191 | 17 | 85.19 | 96 | 3 | 73.29 | 95 | 14 | 0.029 |
| 5-year | 75.2 | 151 | 7 | 82.87 | 84 | 2 | 67.61 | 67 | 5 | 0.01 |
| 10-year | 62.1 | 118 | 16 | 68.37 | 61 | 7 | 55.79 | 57 | 9 | 0.06 |
| 15-year | 46.8 | 49 | 9 | 68.37 | 12 | 0 | 38.17 | 37 | 9 | 0.024 |

**Supplementary Figure legends**

**Supplementary Figure 1. Standardized bias across covariates in propensity match model**

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**Supplementary Figure 2. Survival by type of neuroprotection** A. Unmatched, B. Matched

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**Supplementary Figure 3. Survival by age.** Unmatched (A) and propensity-matched (B) cohorts

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